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TITLE: INFORMATION RECORDING DEVICE

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ABSTRACT:

PURPOSE: To avoid a file name in duplicate by generating a name including processing data based on a date and a time as the file name.

CONSTITUTION: A memory card recording area consists of a boot sector area, a FAT area, a root directory area and a data file recording area, and the root directory area has consecutive directory entry areas 0, 1, 2, 3.... The directory entry is divided into areas representing a file name, an attribute, a reservation, a time, a date and a start cluster and a file size. The file name consists of 11 bytes, in which DSC 3 bytes and sub file 3

PATENT ABSTRACTS OF JAPAN

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(72)Inventor : **SAITO KAZU**

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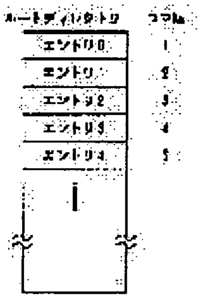
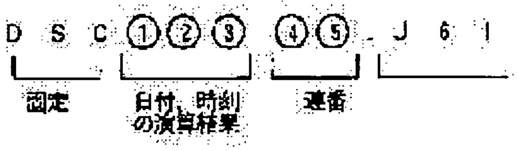
(54) **INFORMATION RECORDING DEVICE**

(57)Abstract:
PURPOSE: To avoid a file name in duplicate by generating a name including processing data based on a date and a time as the file name.
CONSTITUTION: A memory card recording area consists of a boot sector area, a FAT area, a root directory area and a data file recording area, and the root directory area has consecutive directory entry areas 0, 1, 2, 3.... The directory entry is divided into areas representing a file name, an attribute, a reservation, a time, a date and a start cluster and a file size. The file name consists of 11 bytes, in which DSC 3 bytes and sub file 3 bytes are fixed. A result of calculation by using a Hush function or the like is allocated to 3 bytes in the remaining 5 bytes based on the date and time and serial numbers are allocated to two bytes. Processing data such as an entry number are used for the serial number.





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CLAIMS

[Claim(s)]
It is the information recording device which assigns the file name corresponding to this data for the recorded voice data for every unit, respectively, and is stored in the field of the corresponding record medium concerned. record-ed -- data -- every place -- a law -- the recorded image data for every unit, or every place -- a law -- The information recording device characterized by having a means for composing a file name automatically or semi-automatically as the file name concerned contains at least the result of an operation which makes basic data the time data supplied from a predetermined clock function part on the occasion of assignment of the above-mentioned file name in part.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] Especially this invention relates to the information recording device recorded on a record medium by considering information data as a file about an information recording device.
[0002]
[Description of the Prior Art] For example, with an electronic still camera, various data, such as image data, voice data, and control data, are recorded on record media, such as memory card, a magnetic-recording medium, and a magneto-optic-recording medium, as a file. When recording data on record media, such as memory card, by file format, as for memory management, it is desirable to be carried out in a standard DOS form with a personal computer etc. in respect of the compatibility of data, and memory is managed according to DOS form with the electronic still camera. This is the same about other information recording devices.
[0003]
[Problem(s) to be Solved by the Invention] As mentioned above, although the memory management method by DOS form is used for information recording devices, such as the conventional electronic still camera, in order to recognize data, a file name is needed, and the memory management by DOS form has limit of not allowing duplication of a name, on management agreement. The file name besides assumption of the camera on which the file name of the data currently recorded in the card was recorded with the personal computer on the other hand when compatibility with data with a personal computer was made easy may be contained. Moreover, in case the data file recorded with the camera is used by the personal computer side, data are transmitted to the record medium by the side of a personal computer. In this case, when there is the same thing as the file name of data, overwrite of the file of one side may be carried out, and it may be destroyed.
[0004] Then, the purpose of this invention is to offer the information recording device which is determined and adds a file name so that it may not be contradictory to a DOS system. Other purposes of this invention are to offer the information recording device which does not have fear of data corruption at the time of the data exchange with other systems, either.
[0005]
[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the information recording device by this invention It is the information recording device which assigns the file name corresponding to this data for the recorded voice data for every unit, respectively, and is stored in the field of the corresponding record medium concerned. record-ed -- data -- every place -- a law -- the recorded image data for every unit, or every place -- a law -- It has a means for composing a file name automatically or semi-automatically, as the file name concerned contains at least the result of an operation which makes basic data the time data supplied from a predetermined clock function part on the occasion of assignment of the above-mentioned file name in part, and is constituted.
[0006]
[Function] In this invention, duplication of a file name is avoided by generating the name which contains the date and the processing data of time as a file name. Moreover, specification by some users of a file name is enabled, and when a camera compensates the remaining portion, it enables it to generate the name which avoids duplication. Furthermore, when operation in which data size changes is performed, re-reference of the recordable field of a medium was performed and usability is improved.
[0007]
[Example] Next, it explains, referring to a drawing about the example of this invention. Drawing 1 is the configuration block view of the electronic still camera which is one example of the information recording device by this invention. Through optical system 1, image formation of the photographic subject image is carried out to the image pck-up element of the image pck-up circuit 2, and it is changed into an electric video signal. This video signal is changed into a digital signal in the A/D-conversion circuit 3, and is stored in a frame memory 4. After being changed into an analog signal in the D/A-conversion circuit 5, the image data read from the frame memory 4 are changed into a video signal with the video encoder 6, and they are supplied to an output terminal OUT while being shown a monitor table by the viewfinder 7 which consists of liquid crystal etc.
[0008] Moreover, the data compression of the image data read from the frame memory 4 is carried out by the compression expansion circuit 8, and they are recorded on memory card 16 through a bus 10 and the card interface (I/F) circuit 9.

[0009] At the time of reproduction, the image data read from memory card 16 through the card I/F circuit 9 are stored in a frame memory 4, after extension processing is carried out by the compression expansion circuit 8. The image data read from the frame memory 4 is changed into a video signal through processing of the D/A-conversion circuit 5 and the video encoder 6, and is outputted to a viewfinder 7 or an output terminal OUT.

[0010] A system controller 12 controls this whole camera equipment. The clock module 11 supplies information, such as a date for performing processing peculiar to this example which is mentioned later, and time, to a system controller 12. The non-volatilized memory 13 records information required for operation of a system controller 12. A display panel 14 displays the operating state of this camera equipment. The operation switch 15 consists of the various baton switches which direct camera operation. A buzzer 17 emits an alarm, when an unsuitable state arises in camera operation so that it may mention later.

[0011] this example has canceled conventional un-arranging by setting up the file name defined as a file name in the combination of the predetermined result of an operation of a fixed pattern, consecutive numbers, a date, and time data. Drawing 2 shows the example of field arrangement by the DOS convention in memory card. A memory card record section consists of a boot sector field, a FAT field, a root directory field, and a data file record section, and as a root directory field is shown in drawing 3 , it has continuous directory entries 0, 1, 2, 3, and 4 and continuous -- field. With the electronic still camera, the coma numbers 1, 2, 3, 4, and 5 and -- are assigned to each entry fields 0, 1, 2, 3, and 4 and --.

[0012] This directory entry is divided into a file name, an attribute, reservation, time, the date, the start cluster, and the field that shows the size of a file as shown in drawing 4 , and a file name consists of 11 bytes and consists of main-file name:8 byte and subfile name:3 byte. Although the following explanation explains a root directory, the same is said of a subdirectory.

[0013] As shown in drawing 5 , a file name considers 3 bytes in 8 bytes of main-file name "DSC" as fixation, and considers 3 bytes of subfile "J6I" as fixation. The date and the below-mentioned result of an operation of time are assigned to the three of 6 bytes of a main-file name remaining (**-**), and consecutive numbers are assigned to 2 bytes (** and **). The above-mentioned number of digits and a position can be freely selected within specification. consecutive numbers -- the consecutive numbers of a name -- the consecutive numbers from the time of determining the portion of an except -- then, it is good Moreover, processing data, such as an entry number, are sufficient. Byte ** - ** are determined by performing an operation which is mentioned later, using the date at the time of being equipped with memory card, and time data. The data is held until the desorption of the memory card is carried out. This operation may be recalculated at the time of power-on, and may be calculated at every photography.

[0014] The above-mentioned operation is performed like drawing 6 using a Hash Function. The example of drawing 6 arranges several each in a vertical single tier, it is a thing about 13:19 (13:19 on September 26, 1992) of '92.09.26, it expresses several each in a binary digit, and after shifting 1 bit at a time and arranging, it takes EX-OR (exclusive OR) for each binary digit value to lengthwise. EX-OR operation in this case sets to "1", when [of "1" of each digit] the number of total is odd, and when the number is even, it is set to "0." It is displayed on a bottom, and divides and reads this at a time as 4 bits from a high order side, and a result is read by 0-9, and A-F (hexadecimal), and reads it as an ASCII code. At this time, a last byte does not use it. The result is set to "937" like illustration.

[0015] Therefore, the recorded file name turns into a name as shown in drawing 7 , and the determined file name can be displayed on a viewfinder or external monitor display.

[0016] In the determination method of the above-mentioned file name, a name may be read as the code of the alphabet and the number of bits of a break can be set up arbitrarily. Moreover, the operation in the case of file name determination may be performed by other arbitrary technique other than a Hash Function method, and a random number etc. can also be used.

[0017] Next, the example which solves and avoids the problem at the time of duplication of a file name is explained. Whenever it performs external instruments, such as a personal computer, and compatibility with data, it cannot predict what name there is as a data file in a medium, and duplicating possibility exists. this example avoids such a problem.

[0018] In this example, if a display is possible while holding first the file name determined like the above, it will display. next -- if the file name will be used as it is if it investigates whether there is any file name which searches the file name in a directory and is in agreement, or there is nothing and there is no match, and there is a match -- consecutive numbers -- a portion is incremented and processing which returns to reference processing of the above-mentioned file name again is performed

[0019] For example, if the image pck-up data of the 1st sheet are recorded when it is a content as the content of the directory of memory card with which it was equipped shows to drawing 8 , the data of the 1st sheet will be recorded on the area A of drawing 9 . since the file name "DSC93702.J6I" of the 2nd sheet already exists in case the data of the 2nd sheet are recorded (the C section of drawing 9) -- consecutive numbers -- a portion is incremented and it is recorded on area B

[0020] The flow chart of the procedure of this example is shown in drawing 10 . If equipped with memory card, card management area will be read first (Step S1), and it will judge [whether a card format is proper and] whether storage capacity can judge or etc. enough and it can record (Step S2). If judged [that it is unrecordable and], a warning process will be performed (Step S11), and if record is possible, a record starting address will be calculated from the data of management area (Step S3). next, consecutive numbers -- a counter is initialized (step S4) and the date and time data (this example '92.09.26 13:19) are read from the clock module 11 (Step S5), and it changes into a file name according to the above operations ("937"), and holds (Step S6) Then, a file name ("DSC93701.J6I") is generated (Step S7), and there is the same name about this file name as compared with the file name in a directory (Step S8), or no is judged (step S9). if processing will be ended here if there is no same name (the file name is used), and there is the same name -- consecutive numbers -- [0021] which increments a portion (Step S10) and returns to processing of Step S8 The warning process of Step S11 is processing of carrying out singing of the buzzer while blinking the coma number portion on monitor display, as shown in drawing 11 . In drawing 10 , the processing which avoids duplication of a file name is processing of Steps S8-S10.

[0022] The flow chart of the procedure at the time of record is shown in drawing 12 . At the time of record, after setting up a record starting address from the data of management area (Step S21), performing image pck-up processing first (Step S22) and performing compression and transmission processing (Step S23), the writing of a directory and FAT is performed (Step S24). If the next record processing is started, a record starting address will be calculated (Step S25), and it will judge whether record with the enough remaining storage capacity is possible (Step S26). Here, if judged [that it is unrecordable and], a warning process is performed like the above-mentioned (Step S30), if record is possible, consecutive numbers will be incremented (Step S27) and a file name will be generated (Step S28). Then, duplication evasion processing shown in drawing 11 is performed (Step S29), and processing is ended.

[0023] Next, as other examples of this invention, a manual setup of a part of file name is enabled, and an electronic still camera which adds the fixed pattern which a user sets up, and consecutive numbers is explained. As shown in drawing 13 , a manual setup of 6 bytes (character) of the main-file name which constitutes a file name is enabled, and like the above-mentioned example, 2 bytes is made into consecutive numbers and let remaining 3 bytes be a fixed pattern "J6I."

[0024] At the time of a manual setup, if a manual setting directions switch is operated, the 1st-figure display dealing with the 1st byte currently displayed on the monitor as shown in drawing 14 (A) will blink, and a setup of the 1st figure will be urged. A push on the UP/DOWN switch of the operation switch 15 gives a blink indication of the alphabet one by one like drawing 14 (B). It will decide, if the alphabet which a user wishes is displayed and a configuration switch will be pushed, and it moves from a blink display to the following digit like drawing 14 (C). The display when a setup of each digit is completed is shown in drawing 14 (D). In this example, the setting character as a file name by the user is "BIRTH." Then, the display on a monitor will be the directory entry position (this example "01") which is usually a display, as shown in drawing 14 (E).

[0025] In this way, a file name is set up and it succeeds in record. The state where record of three sheets was completed is shown in drawing 15 . When duplication of a file name occurs, duplication is avoided by incrementing consecutive numbers like ****. As for this example, it is needless to say for it to be able to apply also to a subdirectory, and a setup of a subdirectory name is performed similarly.

[0026] The example explained below is an example into which the position on the medium of a record section is changed, when the size of data files, such as a picture, is changed. For example, if a mode of operation and system data are changed like [in compressibility monochrome/color, the field/frame, and the single copy / **** and such combination when carrying out compression processing of the image data changing etc.], the memory space (target file size) which record takes will change. Corresponding to change of this target file size, this example performs re-reference of a non-recorded block, and changes the position on the medium of a record section suitably.

[0027] The record section of memory card is shown in drawing 16 (A), and the management area which is the unit of memory management, and the recorded area shown in the slash section exist in it. Each record file size is equivalent to the file size A as is shown in this drawing (B) by the amount of one piece, and let the file size B shown in this drawing (C) be the size of the double precision of a file size A.

[0028] now, if the file size of the image data to record is A, non-recorded area is re-searched and the recording start position is specified with the pointer A of this drawing (A) -- un--- the time of a file size being B although it is recordable on record area #1 -- un--- since record area #1 is insufficient as for storage capacity -- un--- Pointer B will be set up that it should record on record area #2 In ****, since as big non-recorded area as possible is desirable, Pointer B is set up.

[0029] If it is record of a file size A when there is only a file size A as non-recorded area shows drawing 17 , Pointer A will be set up and non-recorded area will perform eye an inadequate hatchet and warning at the time of record of a file size B.

[0030] The flow chart of the procedure in the example which switches a file size is shown in drawing 18 . If a file size is switched, a file size will be determined with reference to the data table of the file size by setups (Step S41), the non-record section by FAT reference will be searched (Step S42), and the existence of a non-record section will be judged (Step S43). Here, if there is no non-record section, a warning process will be performed (Step S46), and if there is a non-record section, sufficient continuation field or no more than a file size will be judged (Step S44). If judged with it not being continuation field sufficient at Step S44, it will return to processing of Step S42, and if it is that it is sufficient continuation field and is judged, the pointer of a recording start field will be set up (Step S45), and processing will be ended. A pointer is used at the time of the recording start address selection of drawing 12 .

[0031] Like ****, in the example of this invention, the name which contains the date and the processing data of time as a file name is generated, and it has the duplication evasion function of a file name. Moreover, the user could specify a part of file name, the name which avoids duplication when a camera compensates the remaining portion could be generated, when operation in which data size changes is performed, re-reference of the recordable field of a medium was performed and usability is improved.

[0032]

[Effect of the Invention] As explained above, the generation of a file name which is not contradictory to a DOS system is not only possible, but according to the information recording device of this invention, the problem of the data corruption accompanying duplication of a file name is solvable.

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TECHNICAL FIELD

[Industrial Application] Especially this invention relates to the information recording device recorded on a record medium by considering information data as a file about an information recording device.

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PRIOR ART

[Description of the Prior Art] For example, with an electronic still camera, various data, such as image data, voice data, and control data, are recorded on record media, such as memory card, a magnetic-recording medium, and a magneto-optic-recording medium, as a file. When recording data on record media, such as memory card, by file format, as for memory management, it is desirable to be carried out in a standard DOS form with a personal computer etc. in respect of the compatibility of data, and memory is managed according to DOS form with the electronic still camera. This is the same about other information recording devices.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] As mentioned above, although the memory management method by DOS form is used for information recording devices, such as the conventional electronic still camera, in order to recognize data, a file name is needed, and the memory management by DOS form has limit of not allowing duplication of a name, on management agreement. The file name besides assumption of the camera on which the file name of the data currently recorded in the card was recorded with the personal computer on the other hand when compatibility with data with a personal computer was made easy may be contained. Moreover, in case the data file recorded with the camera is used by the personal computer side, data are transmitted to the record medium by the side of a personal computer. In this case, when there is the same thing as the file name of data, overwrite of the file of one side may be carried out, and it may be destroyed.
[0004] Then, the purpose of this invention is to offer the information recording device which is determined and adds a file name so that it may not be contradictory to a DOS system. Other purposes of this invention are to offer the information recording device which does not have fear of data corruption at the time of the data exchange with other systems, either.

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MEANS

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the information recording device by this invention It is the information recording device which assigns the file name corresponding to this data for the recorded voice data for every unit, respectively, and is stored in the field of the corresponding record medium concerned. record-ed -- data -- every place -- a law -- the recorded image data for every unit, or every place -- a law -- It has a means for composing a file name automatically or semi-automatically, as the file name concerned contains at least the result of an operation which makes basic data the time data supplied from a predetermined clock function part on the occasion of assignment of the above-mentioned file name in part, and is constituted.

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OPERATION

[Function] In this invention, duplication of a file name is avoided by generating the name which contains the date and the processing data of time as a file name. Moreover, specification by some users of a file name is enabled, and when a camera compensates the remaining portion, it enables it to generate the name which avoids duplication. Furthermore, when operation in which data size changes is performed, re-reference of the recordable field of a medium was performed and usability is improved.

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EXAMPLE

[Example] Next, it explains, referring to a drawing about the example of this invention. Drawing 1 is the configuration block view of the electronic still camera which is one example of the information recording device by this invention. Through optical system 1, image formation of the photographic subject image is carried out to the image pck-up element of the image pck-up circuit 2, and it is changed into an electric video signal. This video signal is changed into a digital signal in the A/D-conversion circuit 3, and is stored in a frame memory 4. After being changed into an analog signal in the D/A-conversion circuit 5, the image data read from the frame memory 4 are changed into a video signal with the video encoder 6, and they are supplied to an output terminal OUT while being shown a monitor table by the viewfinder 7 which consists of liquid crystal etc.
[0008] Moreover, the data compression of the image data read from the frame memory 4 is carried out by the compression expansion circuit 8, and they are recorded on memory card 16 through a bus 10 and the card interface (I/F) circuit 9.
[0009] At the time of reproduction, the image data read from memory card 16 through the card I/F circuit 9 are stored in a frame memory 4, after extension processing is carried out by the compression expansion circuit 8. The image data read from the frame memory 4 is changed into a video signal through processing of the D/A-conversion circuit 5 and the video encoder 6, and is outputted to a viewfinder 7 or an output terminal OUT.
[0010] A system controller 12 controls this whole camera equipment. The clock module 11 supplies information, such as a date for performing processing peculiar to this example which is mentioned later, and time, to a system controller 12. The non-volatilized memory 13 records information required for operation of a system controller 12. A display panel 14 displays the operating state of this camera equipment. The operation switch 15 consists of the various baton switches which direct camera operation. A buzzer 17 emits an alarm, when an unsuitable state arises in camera operation so that it may mention later.
[0011] this example has canceled conventional un-arranging by setting up the file name defined as a file name in the combination of the predetermined result of an operation of a fixed pattern, consecutive numbers, a date, and time data. Drawing 2 shows the example of field arrangement by the DOS convention in memory card. A memory card record section consists of a boot sector field, a FAT field, a root directory field, and a data file record section, and as a root directory field is shown in drawing 3 , it has continuous directory entries 0, 1, 2, 3, and 4 and continuous -- field. With the electronic still camera, the coma numbers 1, 2, 3, 4, and 5 and -- are assigned to each entry fields 0, 1, 2, 3, and 4 and --.
[0012] This directory entry is divided into a file name, an attribute, reservation, time, the date, the start cluster, and the field that shows the size of a file as shown in drawing 4 , and a file name consists of 11 bytes and consists of main-file name:8 byte and subfile name:3 byte. Although the following explanation explains a root directory, the same is said of a subdirectory.
[0013] As shown in drawing 5 , a file name considers 3 bytes in 8 bytes of main-file name "DSC" as fixation, and considers 3 bytes of subfile "J6I" as fixation. The date and the below-mentioned result of an operation of time are assigned to the three of 6 bytes of a main-file name remaining (**-**), and consecutive numbers are assigned to 2 bytes (** and **). The above-mentioned number of digits and a position can be freely selected within specification. consecutive numbers -- the consecutive numbers of a name -- the consecutive numbers from the time of determining the portion of an except -- then, it is good Moreover, processing data, such as an entry number, are sufficient. Byte ** - ** are determined by performing an operation which is mentioned later, using the date at the time of being equipped with memory card, and time data. The data is held until the desorption of the memory card is carried out. This operation may be recalculated at the time of power-on, and may be calculated at every photography.
[0014] The above-mentioned operation is performed like drawing 6 using a Hash Function. The example of drawing 6 arranges several each in a vertical single tier, it is a thing about 13:19 (13:19 on September 26, 1992) of '92.09.26, it expresses several each in a binary digit, and after shifting 1 bit at a time and arranging, it takes EX-OR (exclusive-OR) for each binary digit value to lengthwise. EX-OR operation in this case sets to "1", when [of "1" of each digit] the number of total is odd, and when the number is even, it is set to "0." It is displayed on a bottom, and divides and reads this at a time as 4 bits from a high order side, and a result is read by 0-9, and A-F (hexadecimal), and reads it as an ASCII code. At this time, a last byte does not use it. The result is set to "937" like illustration.
[0015] Therefore, the recorded file name turns into a name as shown in drawing 7 , and the determined file name can be displayed on a viewfinder or external monitor display.
[0016] In the determination method of the above-mentioned file name, a name may be read as the code of the alphabet and the

number of bits of a break can be set up arbitrarily. Moreover, the operation in the case of file name determination may be performed by other arbitrary technique other than a Hash Function method, and a random number etc. can also be used.
[0017] Next, the example which solves and avoids the problem at the time of duplication of a file name is explained. Whenever it performs external instruments, such as a personal computer, and compatibility with data, it cannot predict what name there is as a data file in a medium, and duplicating possibility exists. this example avoids such a problem.
[0018] In this example, if a display is possible while holding first the file name determined like the above, it will display. next -- if the file name will be used as it is if it investigates whether there is any file name which searches the file name in a directory and is in agreement, or there is nothing and there is no match, and there is a match -- consecutive numbers -- a portion is incremented and processing which returns to reference processing of the above-mentioned file name again is performed
[0019] For example, if the image pck-up data of the 1st sheet are recorded when it is contents as the contents of the directory of memory card with which it was equipped show to drawing 8 , the data of the 1st sheet will be recorded on the area A of drawing 9 . since the file name "DSC93702.J6I" of the 2nd sheet already exists in case the data of the 2nd sheet are recorded (the C section of drawing 9) -- consecutive numbers -- a portion is incremented and it is recorded on area B
[0020] The flow chart of the procedure of this example is shown in drawing 10 . If equipped with memory card, card management area will be read first (Step S1), and it will judge [whether a card format is proper and] whether storage capacity can judge or etc. enough and it can record (Step S2). If judged [that it is unrecordable and], a warning process will be performed (Step S11), and if record is possible, a record starting address will be calculated from the data of management area (Step S3). next, consecutive numbers -- a counter is initialized (Step S4) and the date and time data (this example '92.09.26 13:19) are read from the clock module 11 (Step S5), and it changes into a file name according to the above operations ("937"), and holds (Step S6) Then, a file name ("DSC93701.J6I") is generated (Step S7), and there is the same name about this file name as compared with the file name in a directory (Step S8), or no is judged (Step S9). if processing will be ended here if there is no same name (the file name is used), and there is the same name -- consecutive numbers --
[0021] which increments a portion (Step S10) and returns to processing of Step S8 The warning process of Step S11 is processing of carrying out singing of the buzzer while blinking the coma number portion on monitor display, as shown in drawing 11 . In drawing 10 , the processing which avoids duplication of a file name is processing of Steps S8-S10.
[0022] The flow chart of the procedure at the time of record is shown in drawing 12 . At the time of record, after setting up a record starting address from the data of management area (Step S21), performing image pck-up processing first (Step S22) and performing compression and transmission processing (Step S23), the writing of a directory and FAT is performed (Step S24). If the next record processing is started, a record starting address will be calculated (Step S25), and it will judge whether record with the enough remaining storage capacity is possible (Step S26). Here, if judged [that it is unrecordable and], a warning process is performed like the above-mentioned (Step S30), if record is possible, consecutive numbers will be incremented (Step S27) and a file name will be generated (Step S28). Then, duplication evasion processing shown in drawing 11 is performed (Step S29), and processing is ended.
[0023] Next, as other examples of this invention, a manual setup of a part of file name is enabled, and an electronic still camera which adds the fixed pattern which a user sets up, and consecutive numbers is explained. As shown in drawing 13 , a manual setup of 6 bytes (character) of the main-file name which constitutes a file name is enabled, and like the above-mentioned example, 2 bytes is made into consecutive numbers and let remaining 3 bytes be a fixed pattern "J6I."
[0024] At the time of a manual setup, if a manual setting directions switch is operated, the 1st-figure display dealing with the 1st byte currently displayed on the monitor as shown in drawing 14 (A) will blink, and a setup of the 1st figure will be urged. A push on the UP/DOWN switch of the operation switch 15 gives a blink indication of the alphabet one by one like drawing 14 (B). It will decide, if the alphabet which a user wishes is displayed and a configuration switch will be pushed, and it moves from a blink display to the following digit like drawing 14 (C). The display when a setup of each digit is completed is shown in drawing 14 (D). In this example, the setting character as a file name by the user is "BIRTH." Then, the display on a monitor will be the directory entry position (this example "01") which is usually a display, as shown in drawing 14 (E).
[0025] In this way, a file name is set up and it succeeds in record. The state where record of three sheets was completed is shown in drawing 15 . When duplication of a file name occurs, duplication is avoided by incrementing consecutive numbers like ****. As for this example, it is needless to say for it to be able to apply also to a subdirectory, and a setup of a subdirectory name is performed similarly.
[0026] The example explained below is an example into which the position on the medium of a record section is changed, when the size of data files, such as a picture, is changed. For example, if a mode of operation and system data are changed like [in compressibility monochrome/color, the field/frame, and the single copy / **** and such combination when carrying out compression processing of the image data changing etc.], the memory space (target file size) which record takes will change. Corresponding to change of this target file size, this example performs re-reference of a non-recorded block, and changes the position on the medium of a record section suitably.
[0027] The record section of memory card is shown in drawing 16 (A), and the management area which is the unit of memory management, and the recorded area shown in the slash section exist in it. Each record file size is equivalent to the file size A as is shown in this drawing (B) by the amount of one piece, and let the file size B shown in this drawing (C) be the size of the double precision of a file size A.
[0028] now, if the file size of the image data to record is A, non-recorded area is re-searched and the recording start position

is specified with the pointer A of this drawing (A) -- un--- the time of a file size being B although it is recordable on record area #1 -- un--- since record area #1 is insufficient as for storage capacity -- un--- Pointer B will be set up that it should record on record area #2 In ****, since as big non-recorded area as possible is desirable, Pointer B is set up.

[0029] If it is record of a file size A when there is only a file size A as non-recorded area shows drawing 17 , Pointer A will be set up and non-recorded area will perform eye an inadequate hatchet and warning at the time of record of a file size B.

[0030] The flow chart of the procedure in the example which switches a file size is shown in drawing 18 . If a file size is switched, a file size will be determined with reference to the data table of the file size by setups (Step S41), the non-record section by FAT reference will be searched (Step S42), and the existence of a non-record section will be judged (Step S43). Here, if there is no non-record section, a warning process will be performed (Step S46), and if there is a non-record section, sufficient continuation field or no more than a file size will be judged (Step S44). If judged with it not being continuation field sufficient at Step S44, it will return to processing of Step S42, and if it is that it is sufficient continuation field and is judged, the pointer of a recording start field will be set up (Step S45), and processing will be ended. A pointer is used at the time of the recording start address selection of drawing 12 .

[0031] Like ****, in the example of this invention, the name which contains the date and the processing data of time as a file name is generated, and it has the duplication evasion function of a file name. Moreover, the user could specify a part of file name, the name which avoids duplication when a camera compensates the remaining portion could be generated, when operation in which data size changes is performed, re-reference of the recordable field of a medium was performed and usability is improved.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the block diagram of an electronic still camera showing one example of the information recording device by this invention.
[Drawing 2] It is a field plot plan in the memory card in the example of drawing 1 .
[Drawing 3] It is drawing showing the structure of the root directory of drawing 2 .
[Drawing 4] It is drawing showing the structure of the directory entry of drawing 3 .
[Drawing 5] It is drawing showing the example of composition of the file name in the example of this invention.
[Drawing 6] It is drawing for explaining the file name generation processing in the example of this invention.
[Drawing 7] It is drawing showing the file name generated by processing of drawing 6 .
[Drawing 8] It is drawing showing the example of a directory of the equipped memory card in the example of this invention.
[Drawing 9] It is drawing showing the directory after recording the picture of two sheets on the card of drawing 8 .
[Drawing 10] It is the flow chart which shows the procedure at the time of memory card wearing in the example of this invention.
[Drawing 11] It is drawing showing the example of a display on the monitor at the time of the warning process in the example of drawing 10 .
[Drawing 12] It is the flow chart which shows the procedure at the time of the record in the example of this invention.
[Drawing 13] It is drawing showing the example of composition of the file name whose manual setup of the file name in other examples of this invention was enabled.
[Drawing 14] It is drawing showing change of the example of a display on the monitor at the time of the directions of operation in the example which drawing 13 shows, and a setup.
[Drawing 15] It is drawing showing the directory at the time of the record end in the example which drawing 13 shows.
[Drawing 16] It is drawing for explaining the processing at the time of change of the target file size in the example of further others of this invention.
[Drawing 17] It is drawing for explaining the state where the non-recorded area in the example of further others of this invention is insufficient.
[<A HREF="/Tokujitu/tjitemdrw.ipdl?N0000=237&N0500=1E_N/;?9>:<>;?///&N0001=97&N0552=9&N0553=000020" TARGET="tjitemdrw"> drawing 18] It is the flow chart which shows the procedure at the time of the file size switch in the example of further others of this invention.
[Description of Notations]
1 Optical System 2 Image Pck-up Circuit
3 A/D-Conversion Circuit 4 Frame Memory
5 D/A-Conversion Circuit 6 Video Encoder
7 Viewfinder 8 Compression Expansion Circuit
9 Card Interface (I/F) Circuit
10 Bus 11 Clock Module
12 System Controller
13 Non-Volatilized Memory 14 Display Panel
15 Operation Switch 16 Memory Card
17 Buzzer

[Translation done.]

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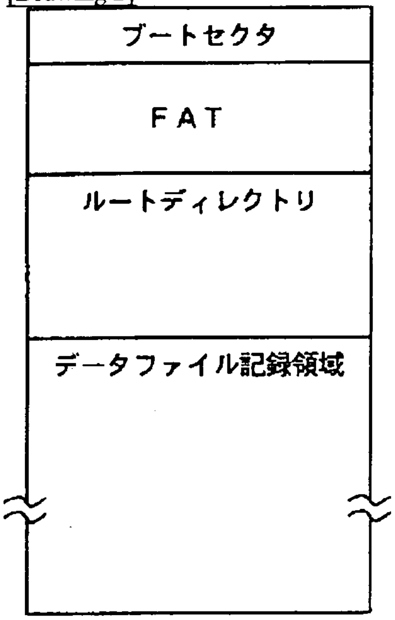
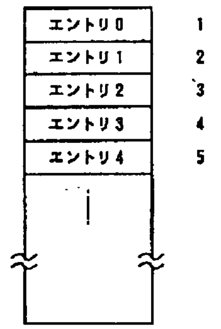
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

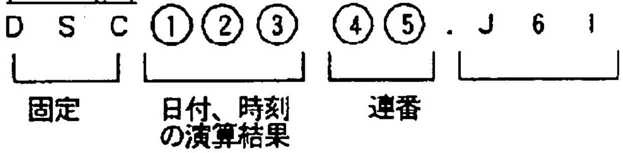
[Drawing 2]


ブートセクタ
FAT
ルートディレクトリ
データファイル記録領域

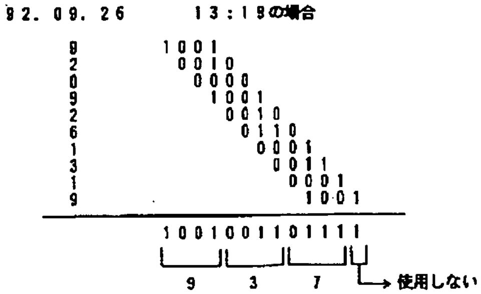
[Drawing 3]


ルートディレクトリ
コマNo
エントリ0
1
エントリ1
2
エントリ2
3
エントリ3
4
エントリ4
5

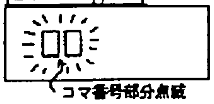
[Drawing 5]


D S C ① ② ③ ④ ⑤ . J 6 1
固定
日付、時刻の演算結果
連番

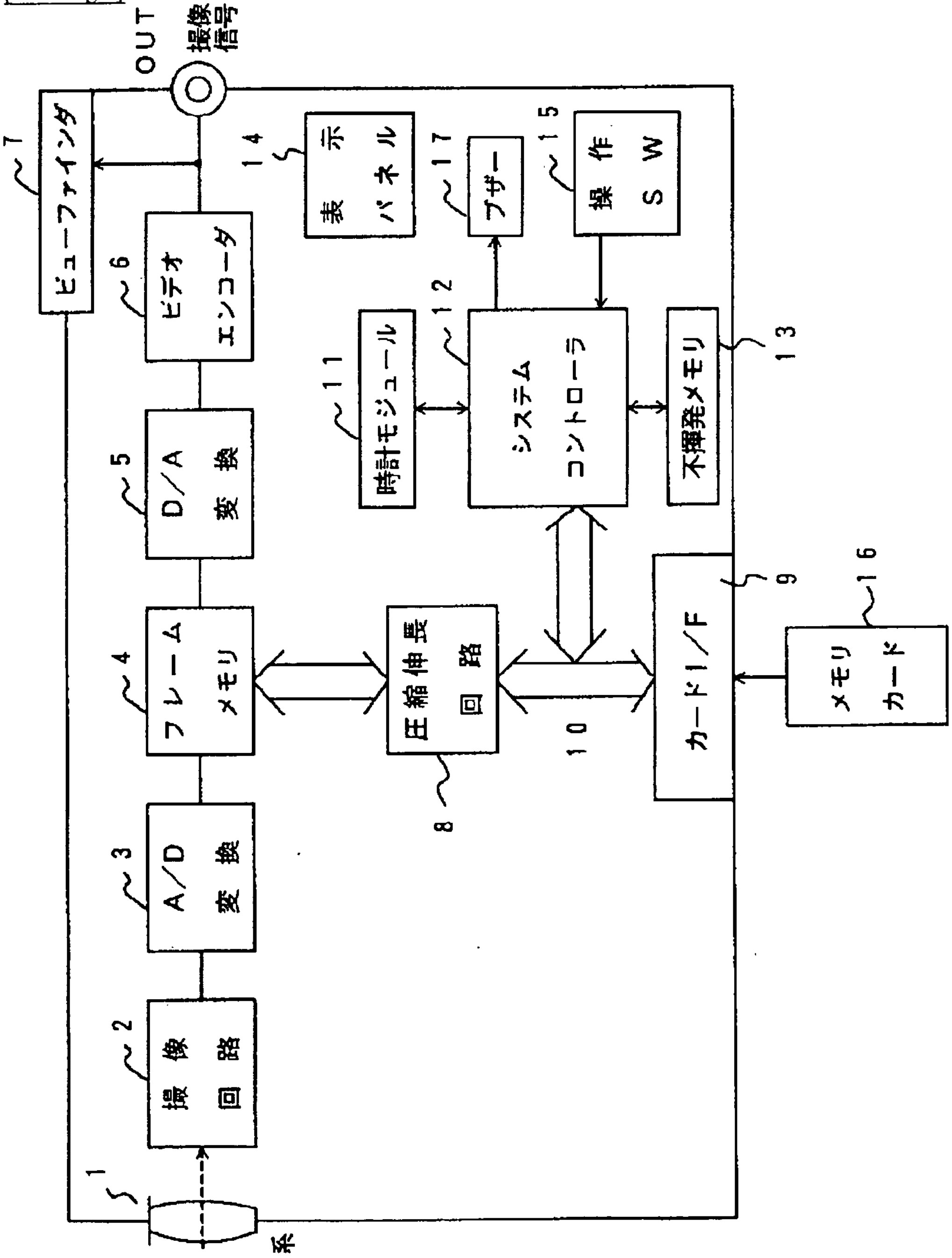
[Drawing 6]


92. 09. 26 13:19の場合
9
2
0
9
2
6
1
3
1
9
1001
0010
0000
1001
0010
0110
0001
0011
0001
1001
1001001101111
9
3
7
使用しない

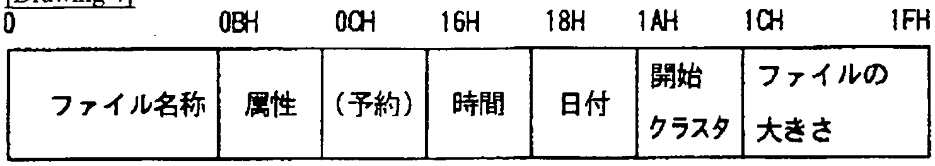
[Drawing 11]



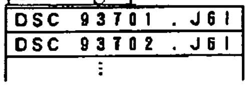
[Drawing 1]


OUT
撮像信号
1
系
2
撮像回路
3
A/D変換
4
フレームメモリ
5
D/A変換
6
ビデオエンコーダ
7
ビューファインダ
8
圧縮伸長回路
9
カードI/F
10
11
時計モジュール
12
システムコントローラ
13
不揮発メモリ
14
表示パネル
15
操作SW
16
メモリカード
17
ブザー

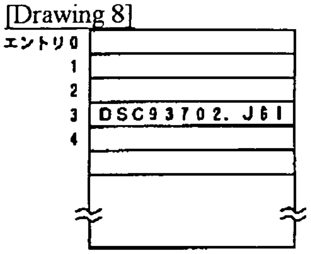
[Drawing 4]


0
0BH
0CH
16H
18H
1AH
1CH
1FH
ファイル名称
属性
（予約）
時間
日付
開始クラスタ
ファイルの大きさ

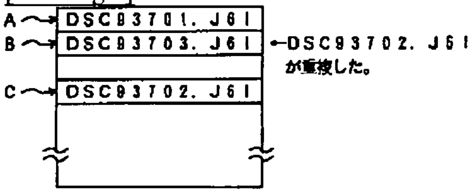
[Drawing 7]


DSC 93701 . J61
DSC 93702 . J61
⋮

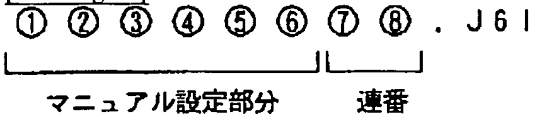
[Drawing 8]


エントリ0
1
2
3
4
DSC93702. J61

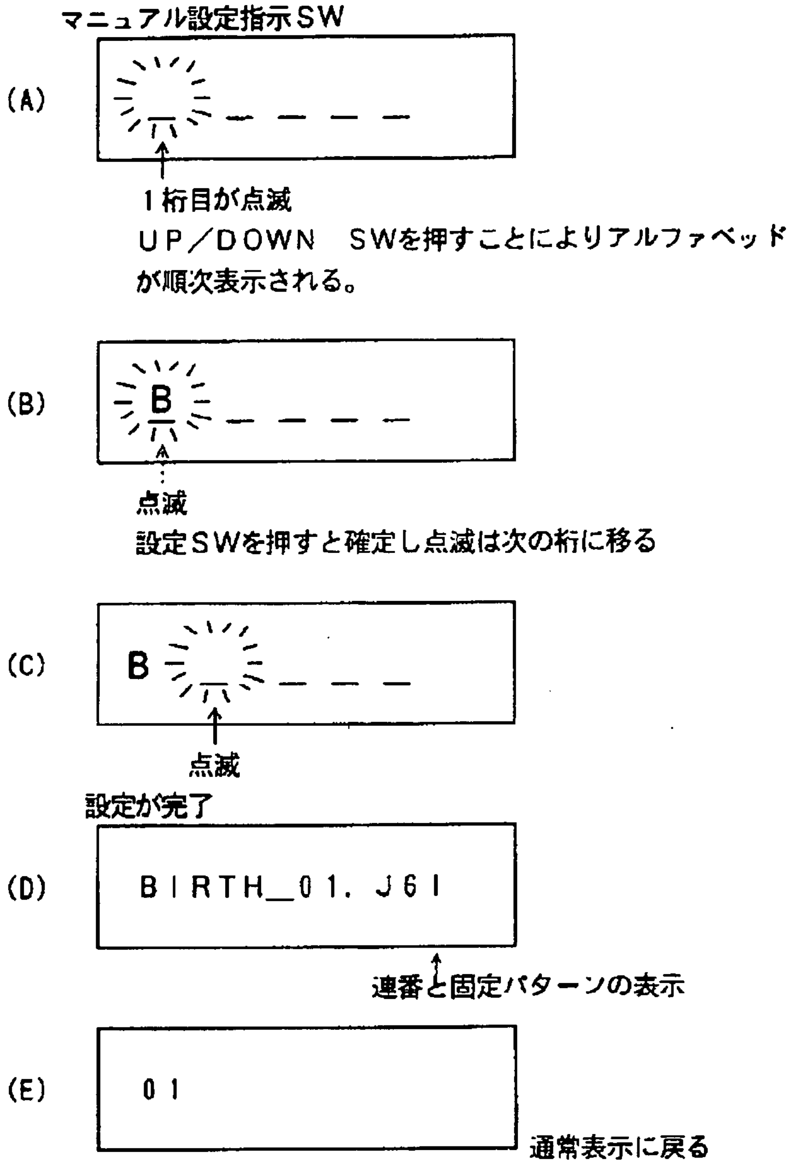
[Drawing 9]


A
B
C
DSC93701. J61
DSC93703. J61
DSC93702. J61
←DSC93702. J61 が重複した。

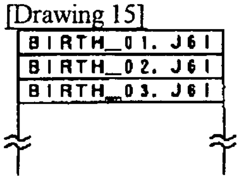
[Drawing 13]


① ② ③ ④ ⑤ ⑥ ⑦ ⑧ . J61
マニュアル設定部分
連番

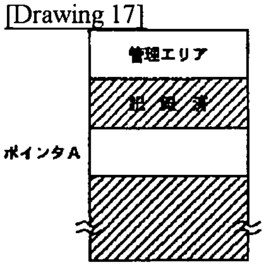
[Drawing 14]


マニュアル設定指示ＳＷ
(A)
１桁目が点滅
ＵＰ／ＤＯＷＮ　ＳＷを押すことによりアルファベッド
が順次表示される。
(B)
B
点滅
設定ＳＷを押すと確定し点滅は次の桁に移る
(C)
B
点滅
設定が完了
(D)
BIRTH_01. J6I
連番と固定パターンの表示
(E)
01
通常表示に戻る

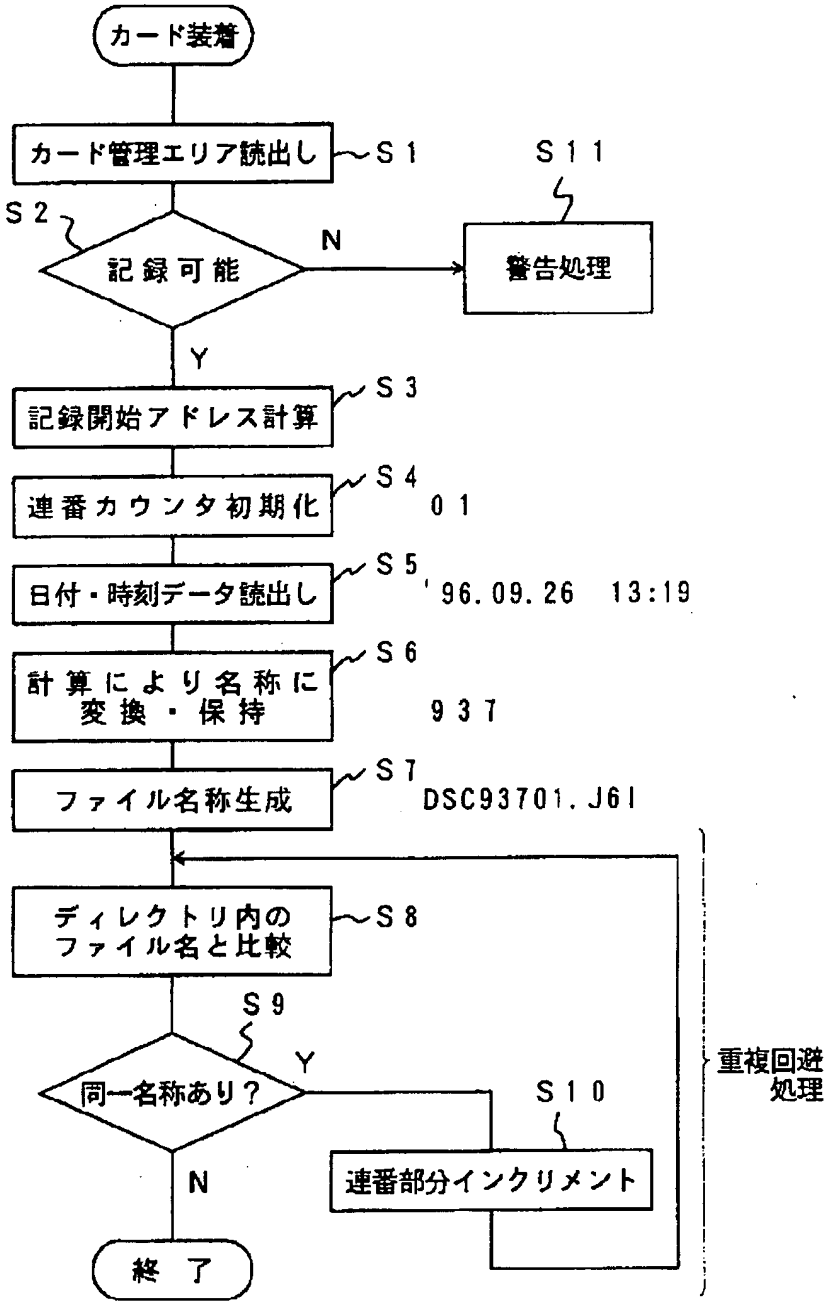
[Drawing 15]


BIRTH_01. J6I
BIRTH_02. J6I
BIRTH_03. J6I

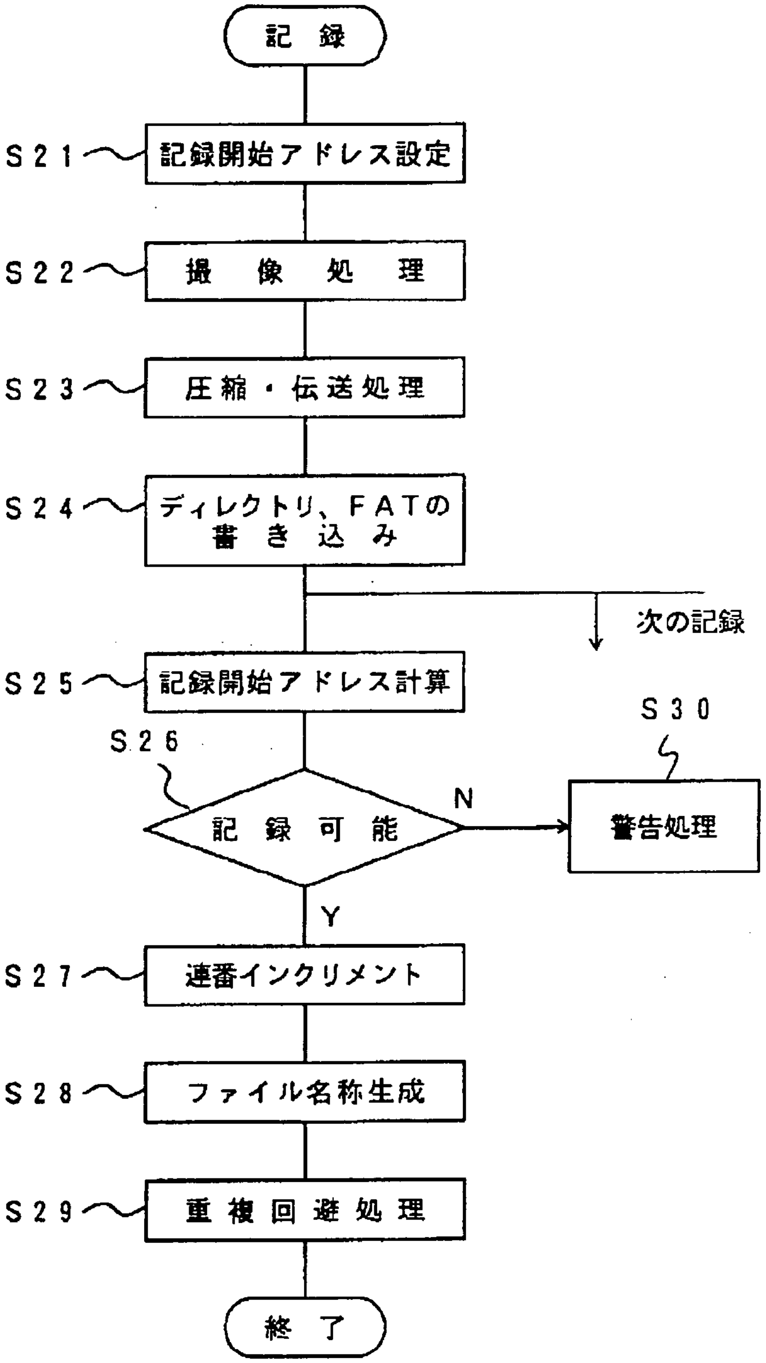
[Drawing 17]


管理エリア
記録済
ポインタA

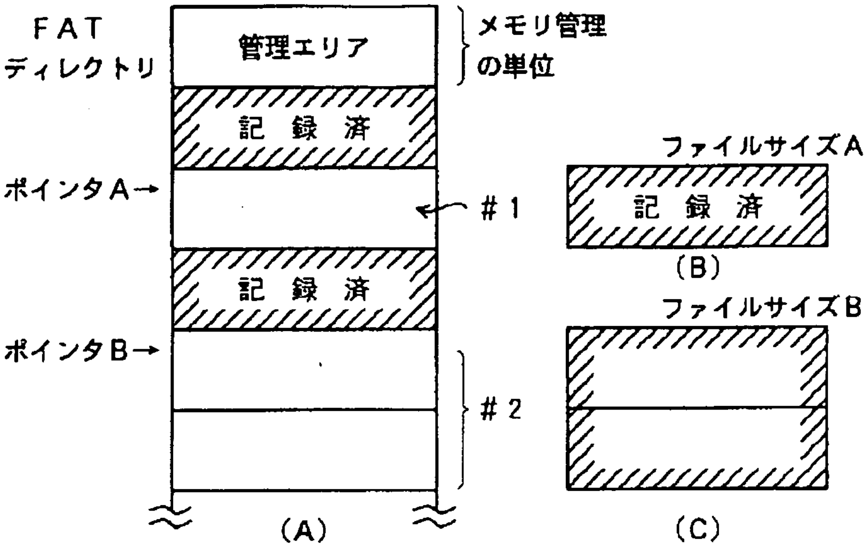
<EMI ID=000019 HE=034 WI=035 LX=1280 LY=1520> [Drawing 10]


カード装着
カード管理エリア読出し
S 1
S 1 1
S 2
記録可能
N
警告処理
Y
記録開始アドレス計算
S 3
連番カウンタ初期化
S 4
0 1
日付・時刻データ読出し
S 5
'96.09.26 13:19
計算により名称に変換・保持
S 6
9 3 7
ファイル名称生成
S 7
DSC93701.J61
ディレクトリ内のファイル名と比較
S 8
S 9
同一名称あり？
Y
S 1 0
連番部分インクリメント
N
終 了
重複回避処理

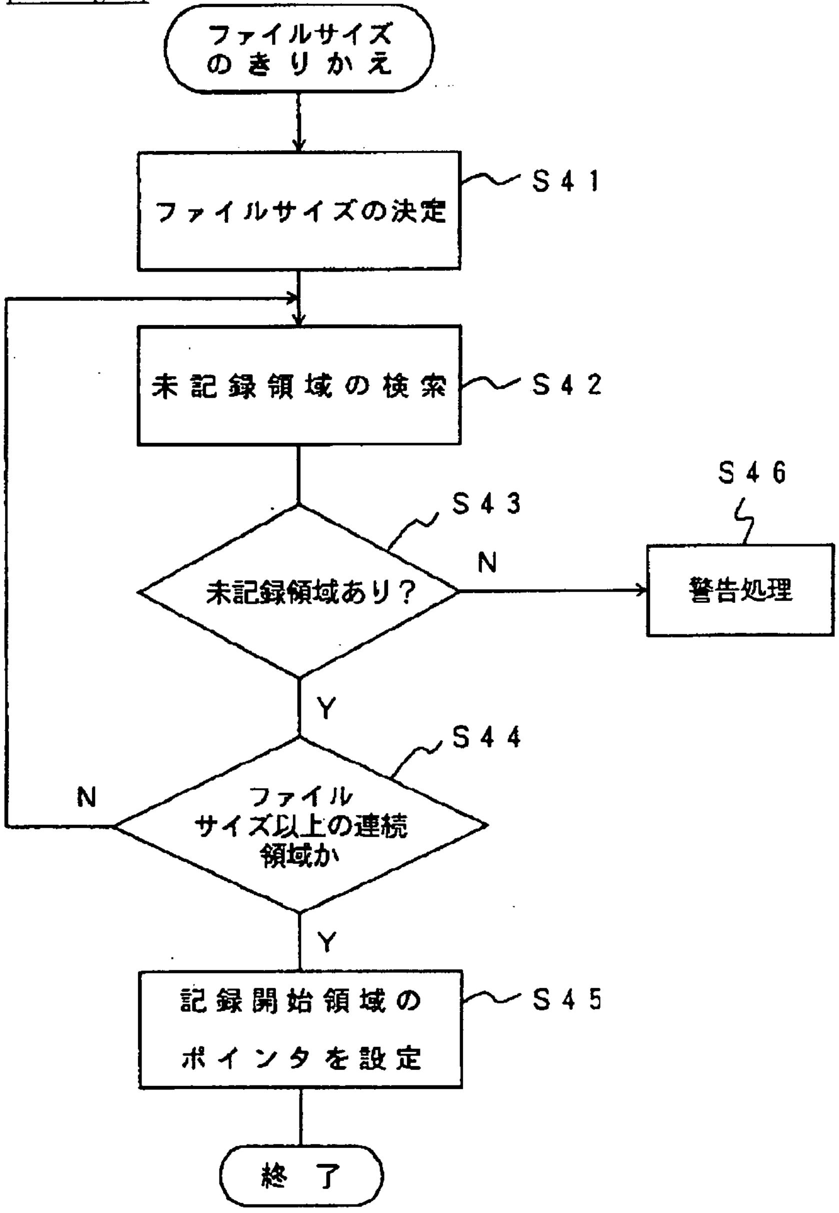
[Drawing 12]


記　録
S21
記録開始アドレス設定
S22
撮　像　処　理
S23
圧縮・伝送処理
S24
ディレクトリ、FATの書き込み
次の記録
S25
記録開始アドレス計算
S26
記　録　可　能
N
S30
警告処理
Y
S27
連番インクリメント
S28
ファイル名称生成
S29
重複回避処理
終　了

[Drawing 16]


FAT
ディレクトリ
管理エリア
メモリ管理
の単位
記録済
ポインタA→
#1
記録済
ポインタB→
#2
(A)
ファイルサイズA
記録済
(B)
ファイルサイズB
(C)

[Drawing 18]


ファイルサイズ
のきりかえ
ファイルサイズの決定
S41
未記録領域の検索
S42
S43
未記録領域あり？
N
S46
警告処理
Y
S44
N
ファイル
サイズ以上の連続
領域か
Y
記録開始領域の
ポインタを設定
S45
終了

[Translation done.]